

# Preface

Aqueous interfaces, by which we mean interfaces between an aqueous phase and a solid, another liquid or a gaseous phase, are ubiquitous in daily life, technological applications and biological systems. The properties of these interfaces are of crucial importance for a wide variety of processes, products and biological functions, such as the formulation of personal care and food products, paints and coatings, microfluidic and lab-on-a-chip applications, cell membranes, and lung surfactant. Accordingly, there is a considerable amount of scientific activity on the subject in academia and in industry. However, research and training in this field appear to be distributed over a broad variety of disciplines, ranging from theoretical physics, over engineering science through to biophysics and biology. Consequently, a great deal of excellent work is performed, but progress may be hampered by a lack of awareness of the available knowledge in other disciplines.

As exemplified by the more general field of soft matter science, where a similar situation was prevalent until roughly 25 years ago, a broad interdisciplinary approach will certainly be beneficial for the scientific understanding of aqueous interfaces and for the design of systems with desirable properties. Thus, in 2010 the consortium of SOMATAI was convinced it was the right time to train young researchers in the field of aqueous interfaces to acquire a high degree of expertise in their original discipline in addition to gaining the necessary knowledge and scientific contacts to tackle problems using a broad interdisciplinary approach. After two attempts, the application for a Marie Skłodowska Curie Initial Training network was granted by the European Commission, which was the starting point of SOMATAI's research and training activities.

As part of SOMATAI's training programme the summer school "Soft Matter at Aqueous Interfaces" was held in Berlin, hosting forty young researchers from all over the world. Besides a series of research papers presented by experts in relevant fields and some lectures dedicated to the specifics of industrial research, the main objective of this school was to provide lectures and tutorials, covering a wide range of topics, from the fundamental text-book physics of fluid interfaces, to advanced

experimental and theoretical methods applied in ongoing research. In this book we are collecting the lecture notes of the latter courses.

The contents cover a wide variety of topics in two ways. On the one hand, they span the range of knowledge levels from the basics of physical chemistry to state of the art experimental and theoretical methods, and on the other the diverse range of the scientific fields involved include electro chemistry and corrosion protection right through to colloidal hydrodynamics. This variety offers a fascinating spectrum of information for the newcomer to the field, regardless of whether they are young researchers starting their first project, or experienced scientists intending to broaden their scope of activities. However, despite the editors' best efforts, it became impossible to merge all the contributions into a monograph-style text book. Rather, the individual chapters should be regarded as stand-alone entry points to the challenging research field of soft matter at aqueous interfaces.

The programme of the school was complemented by a series of research papers, some lectures dedicated to the specifics of industrial research, and one session on the ethics of science, which further demonstrated the school's versatility. Regrettably, transcripts of these presentations can not be included in this book. Therefore we especially want to express our gratitude to:

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